

PATENT COOPERATION TREATY

PCT/JP2003/006680



PCT

 INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
 (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference ONF-4569PCT	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/JP2003/006680	International filing date (day/month/year) 28 May 2003 (28.05.2003)	Priority date (day/month/year) 03 October 2002 (03.10.2002)
International Patent Classification (IPC) or national classification and IPC C07C 65/40, 235/52, A61K 31/192, 31/216, 31/402, 31/4035, 31/404, 31/41, 31/4184, 31/4402, 31/445, 31/472, 31/517, 31/5415, A61P 1/16, 3/04, 5/00, 5/16, 9/00, 9/10, 11/00, 13/02, 13/08, 13/12, 17/00, 17/06, 25/00, 25/02, 27/02, 27/06, 29/00, 35/00, 35/02, 35/04, 37/00, 43/00		
Applicant ONO PHARMACEUTICAL CO., LTD.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.	
2. This REPORT consists of a total of <u>10</u> sheets, including this cover sheet.	
3. This report is also accompanied by ANNEXES, comprising:	
a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows:	
<input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).	
<input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.	
b. <input type="checkbox"/> (sent to the International Bureau only) a total of _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).	
4. This report contains indications relating to the following items:	
<input checked="" type="checkbox"/> Box No. I	Basis of the report
<input type="checkbox"/> Box No. II	Priority
<input checked="" type="checkbox"/> Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input checked="" type="checkbox"/> Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/> Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input checked="" type="checkbox"/> Box No. VI	Certain documents cited
<input type="checkbox"/> Box No. VII	Certain defects in the international application
<input checked="" type="checkbox"/> Box No. VIII	Certain observations on the international application

Date of submission of the demand 09 April 2004 (09.04.2004)	Date of completion of this report 13 October 2004 (13.10.2004)
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

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Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language _____, which is language of a translation furnished for the purpose of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☒ The international application as originally filed/furnished
- ☐ the description:
- pages _____, as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☐ the claims:
- pages _____, as originally filed/furnished
- pages* _____, as amended (together with any statement) under Article 19
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☐ the drawings:
- pages _____, as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

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Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application.

☒ claims Nos. 74-76

because:

☐ the said international application, or the said claims Nos. _____
relate to the following subject matter which does not require an international preliminary examination (*specify*):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. _____
are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. _____ are so inadequately supported
by the description that no meaningful opinion could be formed.

☒ no international search report has been established for said claims Nos. 74-76

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the
Administrative Instructions in that:

the written form

☐ has not been furnished

☐ does not comply with the standard

the computer readable form

☐ has not been furnished

☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with
the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.

☐ see Supplemental Box for further details.

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Box No. IV Lack of unity of invention

1. ☒ In response to the invitation to restrict or pay additional fees the applicant has:
 - ☐ restricted the claims.
 - ☐ paid additional fees.
 - ☐ paid additional fees under protest.
 - ☒ neither restricted nor paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
 - ☐ complied with.
 - ☒ not complied with for the following reasons:
SEE SUPPLEMENTAL SHEET
4. Consequently, this report has been established in respect of the following parts of the international application:
 - ☐ all parts.
 - ☒ the parts relating to claims Nos. 1, 2, 69-73, 77-80

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: IV.3

The chemical structure that is common to all of the compounds that are represented by general formula (I) as set forth in claim 1 includes the acidic group (Z), the ring (D) and (J), which is a branched nitrogen atom or carbon atom, in as much that all of the other groups are variable groups. However, there is an extremely large number of well-known compounds that have the chemical structure in question, as indicated in the international search report; therefore, said chemical structure cannot be considered to be an important chemical structure. Consequently, the inventions that are set forth in the present application do not conform to the requirement of unity of invention.

Therefore, claim 1 and the like are considered to set forth 18 inventions, which are represented by the formula I-J, the formula I-K-1-1, the formula I-K-1-2, the formula I-N, the formula I-L, the formula I-O-1-1, the formula I-O-1-2, the formula I-O-1-3, the formula I-O-1-4, the formula I-O-1-5, the formula I-M-1-1, the formula I-M-1-2, the formula I-M-1-3, the formula I-A, the formula I-B, the formula I-C, the formula I-D and the formula I-E, as set forth in the claims.

The scope of the present application that is considered to conform to the requirement of unity of invention by the International Preliminary Examining Authority is as follows:

Claims 1, 2, 69 to 73 and 77 to 80

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Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: IV.3

The portions of the international application that are considered to pertain to the main invention by the International Preliminary Examining Authority is as follows:

Claims 1, 2, 69 to 73 and 77 to 80.

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims		YES
	Claims	1, 2, 69-73, 77-80	NO
Inventive step (IS)	Claims		YES
	Claims	1, 2, 69-73, 77-80	NO
Industrial applicability (IA)	Claims	1, 2, 69-73, 77-80	YES
	Claims		NO

2. Citations and explanations

- Document 1: WO 02/29001 A1 (University of Virginia Patent Foundation), 11 April 2002
- Document 2: WO 95/12572 A1 (Abbott Lab.), 11 May 1995
- Document 3: EP 341081 A1 (Ono Pharm. Co., Ltd.), 08 November 1989
- Document 4: WO 93/12095 A1 (Pfizer Inc.), 24 June 1993
- Document 5: JP 56-90067 A (Hokuriku Seiyaku Co., Ltd.), 21 July 1981
- Document 6: WO 02/62798 A1 (Dr. Reddy's Research Foundation), 15 August 2002
- Document 7: WO 99/8501 A1 ((Dr. Reddy's Research Foundation), 25 February 1999
- Document 8: JP 11-158144 A (SSP Co., Ltd.), 15 June 1999
- Document 9: JP 10-287634 A (Otsuka Pharm. Co., Ltd.), 27 October 1998
- Document 10: WO 02/646 A1 (Smithkline Beecham Corp.), 03 January 2002
- Document 11: WO 01/206 A1 (Daiichi Pharm. Co., Ltd.), 04 January 2001
- Document 12: EP 573271 A1 (Eli Lilly and Co.), 08 December 1993
- Document 13: EP 390215 A1 (Wakunaga Seiyaku Kabushiki Kaisha), 03 October 1990

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Claims 1, 2 and 69 lack novelty and do not involve an inventive step in the light of documents 1 to 13 cited in the international search report. In addition, claims 70 to 73 and 77 to 80 lack novelty and do not involve an inventive step in the light of document 1 cited in the international search report.

The compounds that are set forth in claim 1 and the feature wherein said compounds are useful as active components for prodrugs or medicinal compositions are disclosed in documents 1 to 13. Furthermore, the feature wherein said compounds are useful as LPA receptor antagonists is disclosed in document 1.

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Box No. VI Certain documents cited

1. Certain published documents (Rule 70.10)

Application No. Patent No.	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
WO 02/92068 A1 [EX]	21 November 2002 (21.11.2002)	09 May 2002 (09.05.2002)	10 May 2001 (10.05.2001)

2. Non-written disclosures (Rule 70.9)

Kind of non-written disclosure	Date of non-written disclosure (day/month/year)	Date of written disclosure referring to non-written disclosure (day/month/year)

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

<Scope>

The chemical structure that is common to all of the compounds that are represented by general formula (I) as set forth in claim 1 includes the acidic group (Z), the ring (D) and (J), which is a branched nitrogen atom or carbon atom, in as much that all of the other groups are variable groups. However, there is an extremely large number of well-known compounds that have the chemical structure in question, as indicated above; therefore, said chemical structure cannot be considered to be an important chemical structure. Consequently, the inventions that are set forth in the present application do not conform to the requirement of unity of invention.

Furthermore, the inventions as set forth in claims 69 to 73 and 77 to 80 pertain to medicinal compositions that contain a compound represented by the abovementioned general formula (I). However, the compounds represented by the abovementioned general formula (I) involve an extremely large number of varied compounds, as indicated above, and the description only supports the pharmacological activity of a limited portion of the compounds that have the specific chemical structure in question. Consequently, there is a large number of well-known medicinal compositions that contain a compound represented by the abovementioned general formula (I), thereby making it extremely difficult to carry out a search in relation to the entire scope of claims 69 to 73 and 77 to 80 or to cite all of the prior art documents that are related thereto. Thus, the international search was carried out mainly in relation to medicinal compositions which contain the compounds that are supported in the description.